



**Science Unit: *Decomposers and Recyclers***

**Lesson: 2 *Snails and Slugs***

School Year: 2012/2013

Developed for: Dr. George M. Weir School, Vancouver School District

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Grade level: Presented to grades K-3; appropriate for grades K – 5 with age appropriate modifications.

Duration of lesson: 1.25 hours

Notes: This lesson requires one snail or slug per student or pair of students. It is best to do this lesson during late spring or fall, when snails and slugs are easily collected from a garden or green space. Collect enough specimens the day before and keep them in a ventilated, closed tub with leaf matter, in a cool, shady place until you are ready to use them. After the lesson, release all animals back to their natural habitat.

**Objectives**

1. Explore snails and slugs and learn about their habitats, food, predators and life cycles.
2. Learn about snails and slugs as recyclers in the forest and garden ecosystems.

**Background Information**

Snails and slugs are invertebrates, which belong to the mollusc phylum. They can be further categorized as gastropods, a subgroup of molluscs. In B.C. we are home to 94 species of land snails and slugs. Gastropods have a strong muscular foot and with the aid of slime can move smoothly over rough surfaces. Close to their mouth these gastropods have a slime gland, which produces slime to reduce friction so that they can glide. Snails and slugs have been noted to crawl over knife blades without harming themselves due to the presence of their slime (not recommended to try in the classroom!). The slime is not water-soluble so it does not wash off in the rain. This constant presence of slime also helps the snail or slug to keep moist, particularly during dry periods. Land snails and slugs eat by scraping plant matter using their radulas (a tongue like organ with rough teeth like projections). Some land snails and slugs are hermaphrodites but they do mate to exchange sperm. Common snails found in Vancouver gardens and parks are the Grove Snails (*Cepaea nemoralis*). These are yellow-banded snails, which eat plant matter and fungi.

**Vocabulary**

Decomposer: Organisms that obtain their food and energy from breaking down complex organic substances from organisms or their parts that are dead or decaying, into simple organic substances they can use. Fungi and bacteria are decomposers.

Detritivore/ Decomposer: An organism that obtains its nutrients by consuming detritus (fresh and decomposing plant or animal materials as well as organic fecal matter).

Detritus: Fresh or decomposing plant and animal materials (non-living organic material).

Hermaphrodite: An animal which has both male and female sexual organs



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<u>Mollusc:</u>	An invertebrate in this phylum has a soft unsegmented body, including a mantle and often a shell.
<u>Gastropod:</u>	A taxonomic class which includes snails and slugs and is part of the mollusc phylum. Gastropods have a muscular foot used to move, and eyes and sensory organs on a distinct head.
<u>Mantle:</u>	Important body part which encloses all the internal organs and secretes calcium carbonate to produce a shell (not slugs)
<u>Radula:</u>	A rough tongue-like organ covered with rows of tiny teeth used to obtain food
<u>Tentacle:</u>	A flexible extension on the head which is used for sensing.
<u>Pneumostome:</u>	A small opening in the side of the gastropod through which air passes to breathe
<u>Herbivore:</u>	An organism that eats plants.

### **Materials (In Class)**

- Snails and or slugs (one for each student)
- Magnifying glasses
- Dissecting microscopes
- Petri dishes (one for each student) or bug jars
- Double sided tape such as mounting tape
- Green and brown leaves
- Poster of snail external anatomy, internal anatomy
- Small square cut outs of rough sand paper, stuck on to small squares of double sided tape (to mimic a radula)
- Poster of lifecycle of a snail

### **In the Classroom**

#### **Introductory Lesson (Classroom)**

We are going to learn about snails. How do they move? How do they reproduce? How do they breathe? What do they eat? How do they eat? Do you think they have teeth? What eats them? Are they recyclers? Why? Discuss differences between snails/slugs and other recyclers that we have studied (worms, woodbugs, fungi).

1. Students will familiarize themselves with snails and/or slugs and find all the body parts
2. Students will focus on observation skills, drawing, labeling and recording data.
3. Safety Guidelines:
  - Tell students to handle animals gently and with care.
  - Remind students that all animals will be returned to their natural habitat after the lesson
  - Remind students to wash hands well after handling snails and slugs

### **Science Activity**

Each student will be given a Petri dish (or bug jar) and a snail or slug. They will study their snail/slug up close with the aid of a magnifying glass to find its shell, foot, tentacles, eyes, mantle, and pneumostomes. Students will then be asked to lift up their Petri dishes to observe their snails/slugs move from below. The muscular foot and trail of slime should be clearly visible. If some students have snails and others have slugs, allow time to switch organisms. Compare and contrast both types of gastropods. Use a dissecting microscope to locate the anus, pneumostome and other parts of the snail or slug.

Students will be asked to draw their snail/slug and to label the drawing.



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Then students will be given a small piece of double-sided tape with a piece of rough sandpaper stuck on one side, and a leaf. The tape can be placed on their index finger. They will then try to imitate the snail's radula (rough tongue-like organ) and 'scrape' the leaf with their taped finger. Allow students to check their sandpaper afterward to see if bits of leaf adhered to it. This is how the radula works and how the snail gets its food.

### **Closure Discussion**

Discuss differences between snails/slugs and other recyclers that we have studied (worms, woodbugs, fungi). Compare differences in how all these decomposers ingest their food.

### **References**

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- Greenaway, Theresa. Slugs and Snails. 1999. Raintree Steck-Vaughn. Austin Texas.
- Forsyth, Robert. Land Snails of B.C. 2004. Royal B.C. Museum Handbook. Victoria.